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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/036,076 | 12/27/2001 | Douglas E. Breese | 1-23333 | 3930 |

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MACMILLAN, SOBANSKI & TODD, LLC
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TOLEDO, OH 43604

EXAMINER

BINDA, GREGORY JOHN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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3679

DATE MAILED: 03/19/2003 6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
10/036,076

Applicant(s)
Breese et al

Examiner
Greg Binda

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3679



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Mar 26, 2002 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3

4) ☐ Interview Summary (PTO-413) Paper No(s). _____

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____

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Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference signs L1 & L2 mentioned in the description on page 8, line 18.
2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to comply with 37 CFR 1.71 and 1.75(d)(1) because the detailed description fails to provide proper antecedent basis for the limitations of claim 8.

Claim Rejections - 35 U.S.C. § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to

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which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 6 recites the limitation, "the male end splined end portion [34] is made from a material which is different from the material used to make the neck portion [36] and the tube seat portion [40]. However, the male end splined end portion 34, neck portion 36 and the tube seat portion 40 are disclosed in Fig. 2 and page 5, lines 19-21, as all parts of a single integral end piece 38 that is disclosed on page 6, lines 22-25 and in Fig. 9 as being made from the **same** material.

Claim Rejections - 35 U.S.C. § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 9, 16, 17 & 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Gleasman et al, US 5,647,802 (Gleasant '802).

a. Claims 1, 16, 17 & 19. Gleasant shows a vehicle drive train assembly which allows limited angular and axial movement, the assembly comprising: a source of rotational power (col. 1, line 41); at least one rotatably driven vehicle wheel (lines 41 & 42); and a male splined member 20 and a female splined member 10 which are connected between the source of rotational power and at least one vehicle wheel to transmit rotational power therebetween, wherein the male

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splined member 20 is a driveshaft. Fig. 13B shows the splines of the male splined member having side surfaces which are convex in shape. Fig. 19 shows the splines of the male splined member having outer surfaces which are convex in shape.

b. Claim 2. Gleasman discloses in col. 14, lines 12-14 an allowable joint angle between the male and female splined members is at least about 3 degrees.

c. Claim 3. Fig. 13B shows the convex splines are generally elliptical in shape.

d. Claim 4. Fig. 2 shows the male splined member 20 is a driveshaft and that the splines are formed on an end portion of the driveshaft

e. Claim 9. Fig. 19 shows a seal 161' covering the connection between the male and female splined members.

8. Claims 1-4, 9, 16, 17 & 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gleasman et al, US 5,878,492 (Gleasman '492).

Claim Rejections - 35 U.S.C. § 103

9. Claims 1-5, 7-9, 11-14 & 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uppal, US 3,953,158 in view of Wildhaber, US 3,292,390. The figure^{of Uppal} shows a vehicle drive train assembly comprising: a source of rotational power (see "motor" col. 1, line 16); at least one rotatably driven vehicle wheel (see "steering unit" in line 21); and a male splined member 41 and a female splined member 23 which are connected between the source of rotational power and the at

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least one vehicle wheel to transmit rotational power therebetween, wherein the male splined member 41 is a driveshaft (col. 3, line 15). The figure shows that the driveshaft 41 includes an end piece 43, 59, 57 and a main tubular portion 41, the end piece including the male splined end portion 43, a tube seat portion 57 which is attached to the main tubular portion 41, and a neck portion (surface upon which the numeral 59 is written) between the male splined end portion 43 and the tube seat portion 57, the neck portion having a diameter which is less than the diameters of both the male splined end portion 43 and the tube seat portion 57. The male splined end portion 43 has a diameter which is smaller the diameter of the tube seat portion 57. The figure shows the crowned (col. 3, line 12) splines 43 of the male splined member 41 having outer surfaces which are convex in shape which provide a joint angle of at least 3 degrees. Uppal does not expressly disclose the crowned splines 43 with side surfaces which are convex in shape. In Fig. 3, Wildhaber shows crowned (col. 1, line 70) splines 15 with side surfaces 26 which are convex (col. 2, line 21) in shape. In col. 1, lines 29-33, Wildhaber teaches making the crowned splines in the manner shown in Fig. 3 in order to provide splines that can avoid edge contact while providing maximum coupling capacity. It would have been obvious to one of ordinary skill in the art to modify the vehicle drive train assembly of Uppal by making the splines of the male splined member with side surfaces which are convex in shape in order to provide splines that can avoid edge contact while providing maximum coupling capacity as taught by Wildhaber.

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10. Claims 1-4, 9, 10, 16, 17, 19 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boutin, US 5,911,286 in view of Wildhaber. Boutin shows a drive train assembly comprising all the limitations of the claims except Boutin does not expressly disclose the crowned splines 52 with side surfaces which are convex in shape. However, it would have been obvious to one of ordinary in the art to modify the vehicle drive train assembly of Boutin by making the splines of male splined member with side surfaces which are convex in shape for the same reason noted immediately above.

Allowable Subject Matter

11. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Allen shows crowned splines with convex sides and outer surfaces.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Greg Binda whose telephone number is (703) 305-2869. The examiner can

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normally be reached Monday through Thursday from 9:30 am to 7:00 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne, can be reached on (703) 308-1159. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9326 (before final), (703) 872-9327 (after final) and (703) 872-9325 (customer service).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2168.



GREGORY J. BINDA
PRIMARY EXAMINER